# Modern Engineering

Day 15

## Prudential Financial

GENERAL ASSEMBLY

# LESSON ROADMAP

AWS Cloud Formation

Load Balancing

AWS DynamoDB

AWS Deployment

Prudential AWS

 

# MEF MODULE 5 DAY 15: AWS Cloud Formation

| Schedule | |
|---|---|
| 9:00–10:00 am | Welcome and Warm-Up / Lab Time |
| 10:00 am–12:00 pm | **GUEST: Cloud Formation Template** |
| 12:00 am–12:30 pm | **GUEST: How Prudential Uses AWS Resources** |
| 12:30–1:30 pm | Lunch |
| 1:30-2:00 pm | **AWS Cloud Formation Provisioning** |
| 2:00–4:50 pm | **AWS DynamoDB** |
| 4:50–5:00 pm | Bring It Home |

 

# LEARNING OBJECTIVES

1. Understand AWS Cloud Formation architecture
2. Articulate the benefits of logging in a cloud-based application
3. Use AWS DynamoDB to replace a Postgres SQL database in an Express application
4. Explore Prudential's Cloud Formation templates and use of AWS services

# GUEST SPEAKER:
# Prudential's Cloud Formation Template

# GUEST SPEAKER:
# How Prudential Uses AWS Resources

# Break Time

 

Automation and CloudFormation

# Intro to AWS CloudFormation

# Intro to CloudFormation


AWS CloudFormation is an IaC tool for managing resources on AWS.

It integrates well with most AWS services and provides a set of pre-defined resource types that can be configured.

CloudFormation works by allowing you to define **templates.** These templates can be written in YAML or JSON and are declarative: they describe the resources you want to manage and use.

# Example CloudFormation Template

```
Resources:

  MyS3Bucket:

    Type: 'AWS::S3::Bucket'

    Properties:

      BucketName: my-bucket-name
```

Above is a simple example template for creating an **S3 bucket in YAML**.

 

# Guided Walk-Through: CloudFormation

30 minutes

**Now, let's go through a guided Intro to CloudFormation GUI on AWS, and CloudFormation CLI.**

If you haven't done so already, make sure you are logged into your AWS account: https://console.aws.amazon.com

AWS CloudFormation

 

# Common Use Cases

We'll be using CloudFormation to handle some common use cases:

- Provisioning resources, such as VMs
- Managing security groups
- SSH Keys
- EIP

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# Deploying to AWS

# The limitations imposed by ephemeral environments

- No server to log into and inspect
- All configuration must be scripted
- All apps must be able to start in an automated way
- Nominally more complex networking, endpoints, and AWS infrastructure

# The limitations imposed by asynchronous systems and microservices

- The requests and logs may not match up in a linear fashion
- Higher than expected latency
- A multitude of deployments
- Nominally more complex networking, endpoints, and AWS infrastructure

 

# Security Groups

## Firewalls on Steroids

- Ports and traffic can be allowed by:
  - IP
  - CIDR
  - Other security groups - this is the killer feature

# IAM Roles

## RBAC and ABAC

- IAM roles cover human users, services, and applications.
- Every service, instance, and operation has an IAM role.

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# Criticality of GOOD Logging

Guided Walk-Through:

# Provisioning Resources

**Using CloudFormation:**

- Provision an EC2 instance
- Add a security group
- Add an SSH key
- Add an EIP

**We will be available to provide additional support and troubleshoot problems.**

**Detailed instructions can be found in GitHub.**

 

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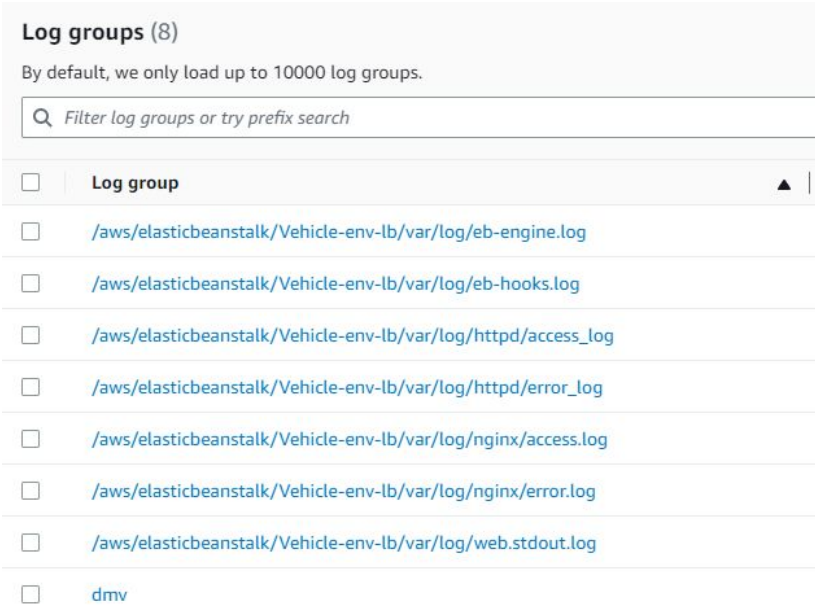
**Good logs in a word: DETAIL. You need to know not only what service failed but have enough information to trace the path through other services.**

# CloudWatch

- Ephemeral applications **require** centralized, external logging.
- CloudWatch logs have configurable retention.
- They are searchable.
- They span instances.



AWS Cloud Formation

# AWS DynamoDB

# AWS DynamoDB: A More Flexible Database

SQL's greatest strength can sometimes be its greatest weakness as well: the strictly controlled **structure** requires tight management of schemas and changes over time.

DynamoDB is the AWS solution to providing a NoSQL database solution: less structure, less tight relationships among schemas, just a fast and simple form of data storage.

## Guided Walk-Through:
# DynamoDB Demo

Exploring a Cloud-Based NoSQL Database: A Walkthrough Using DynamoDB.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